

Control strategy for a drum-boiler system in the thermal power plant

노순다이, 송병호[†], 선도원¹, 박재현¹, 이재구¹

군산대학교; ¹에너지기술연구원

(bhsong2006@gmail.com[†])

Drum-boiler is one of the most popular equipment of the industrial chemical processes. The control of pressure and drum water level is the most crucial in the boiler operation. The boiler might get damaged if the level is too low that causes overheating of the riser tube, and also if the level too high that causes the overflow of water and the miss of separator function. Therefore, the drum water level needs to be kept within a proper range. And also, to avoid explodes the boiler system due to the over ultimate stress, the pressure of steam in the boiler needs to be optimized corresponding to the output design. The drum water level and pressure are affected by various parameters and signals of nonlinearity, uncertainty, disturbance, and overshoot. The Proportional Integral Derivative (PID) controller is used for the feedback control which involves performing complete mathematical modeling and control strategy. This study shows the comparative analysis of the control performance of the drum-boiler model and PID controller. The results of the proposed control strategy demonstrate the performance of the boiler to reach the desired point.